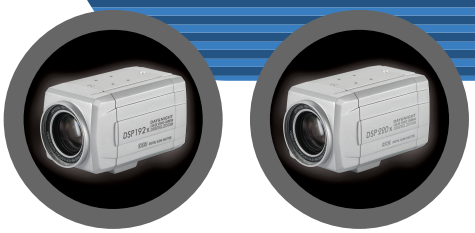
. Digital Zoom Camera Series

DSP

Day & Night Color Camera

192x 220x

Digital Zoom



COLOR ZOOM CAMERA SERIES
DIGITAL POWER ZOOM

OWNER'S MANUAL

OSD
On-Screen Display

DIGITAL

P/N : 3810-0046B (Ver.0506E) Color Zoom Camera Series

- Design and specifications are subject to change without notice.

. User Information

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION! TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Explanation of two Symbols

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance-(servicing) instructions in the literature accompanying the appliance.

THE GRAPHIC SYMBOLS WITH SUPPLEMENTAL MARKING ARE ON THE BOTTOM OF THE SYSTEM.

"WARNING-TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE"

INFORMATION

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

WARNING

The manufacturer could void the user's authority to operate the equipment.

CAUTION - To prevent electric shock and risk of fire hazards:
- Do NOT use power sources except for that specified.
- Do NOT expose this appliance to rain or moisture.

This installation should be made by a qualified service person and should abide to all local codes.

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1. Model Description

- **Thank you for purchasing this COLOR ZOOM CAMERA.**

Before operating the camera, confirm the camera model and proper power voltage. In order to understand the manual thoroughly, we'll introduce our model descriptions.

Model No.	Type (Rear)	Signal System	Power Input	D&N DSS	UTP Output	Communication System
1	A	NTSC/High	DC 12V	O	X	RS-485/PTZ Controller
2	A	PAL/High	DC 12V	O	X	RS-485/PTZ Controller
3	C	NTSC/High	DC 12V	O	X	RS-232C
4	C	PAL/High	DC 12V	O	X	RS-232C
5	A	NTSC/High	DC 12V	X	X	RS-485/PTZ Controller
6	A	PAL/High	DC 12V	X	X	RS-485/PTZ Controller
7	C	NTSC/High	DC 12V	X	X	RS-232C
8	C	PAL/High	DC 12V	X	X	RS-232C
9	B	NTSC/High	AC24V/DC12V	O	X	RS-485/PTZ Controller
10	B	PAL/High	AC24V/DC12V	O	X	RS-485/PTZ Controller
11	D	NTSC/High	AC24V/DC12V	O	O	RS-485
12	D	PAL/High	AC24V/DC12V	O	O	RS-485
13	B	NTSC/High	AC24V/DC12V	X	X	RS-485/PTZ Controller
14	B	PAL/High	AC24V/DC12V	X	X	RS-485/PTZ Controller
15	D	NTSC/High	AC24V/DC12V	X	O	RS-485
16	D	PAL/High	AC24V/DC12V	X	O	RS-485
17	A	NTSC/Normal	DC 12V	X	X	RS-485/PTZ Controller
18	A	PAL/Normal	DC 12V	X	X	RS-485/PTZ Controller
19	B	NTSC/Normal	AC24V/DC12V	X	X	RS-485/PTZ Controller
20	B	PAL/Normal	AC24V/DC12V	X	X	RS-485/PTZ Controller

2. Safety and Precautions

- **Avoid using the camera in extreme temperature environments.**
  Using the camera in temperatures exceeding 50°C or below -10°C may lessen picture quality or cause the camera to malfunction.
- **Avoid using the camera in high humidity environments.**
  Using the camera in places with high humidity may lessen picture quality because of moisture on the lens.
- **Avoid using the camera in unsteady lighting.**
  The camera will not work properly in places with great changes in illumination intensity, such as fluorescent lamps.
- **Make sure no foreign substances get on the front glass of the camera.**
  Do not disassemble the camera and prevent foreign substances from getting into the camera.
- **Make sure that the camera is not exposed to an intense light source such as direct sunlight.**
  It may damage the CCD.
- **Camera may be damaged if dropped or subjected to strong impact.**
- **Keep camera dry.**
  The camera will be damaged if immersed in water.
- **Avoid using the camera in the presence of oil and gas.**
  The camera will be damaged if oil or gas penetrates the exterior.
- **Caution**
  - Smear or blooming (when bright areas spreads out) may occur when photographing in strong light, i.e. car headlights, etc.
  - Make sure that you are using a compatible power adapter before connecting it to the camera.

3. Features

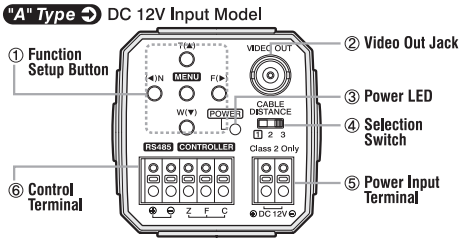
- **High Resolution**
  The horizontal resolution of 480/ 380 TV lines can be achieved by using a high density CCD having effective 410K/ 270K pixels, which provides clean, noiseless and reliable pictures.
- **Built-in Power Zoom Lens**
  Subjects can be magnified up to 192/ (220) times with be 16x/ (22x) optical zoom and 12x/ (10x) digital zoom.
- **AI/Fuzzy Control Circuit with DSP**
  Advanced DSP(Digital Signal Processor) technology automatically adjusts operations such as Iris, white balance flexibly adapting to environmental conditions.
- **Remote Control through RS-232C/RS-485 Interface**
  Remote control operations are possible through RS-232C/ RS-485 interface for Focus and Zoom control.
  - In addition, the unit lets you command white balance and exposure manually using RS-232C/ RS-485 interface.
- **PROTOCOL: Default, Pelco-D**
- **OSD(On-Screen Display) Function**
- **Wire Remote Controller (Option)**
- **Digital Slow Shutter for full color surveillance under very low light condition : 0.001Lux (at x 128 Field)**
- **Day & Night Function : 0.1Lux**

  • Day & Night Model
- **Coax or UTP(Unshielded Twisted Pair) Video Transmission.**
  Built-in UTP Transmitter provide a significant advantage in labor/ material saving on installations.

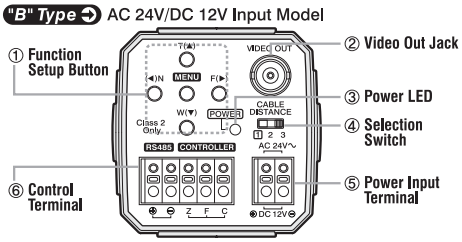
  • UTP Video Out Model

4. Rear View and Part Names

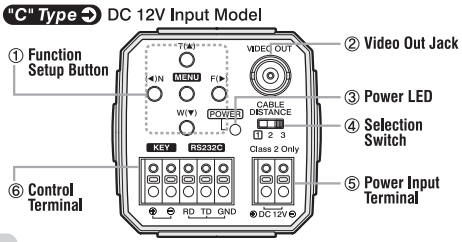
"A" Type ➲ DC 12V Input Model



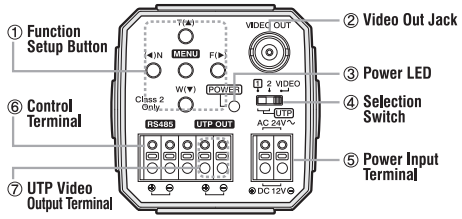
"B" Type ➲ AC 24V/DC 12V Input Model



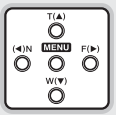
"C" Type ➲ DC 12V Input Model



"D" Type ➲ UTP Transmisson Model



① **Function Setup Button:**
Functions can be setup using 5 buttons on the camera's rear panel.



➲ **MENU Buttons :** Used to access menu mode. Also used to escape menu mode.

➲ **TELE/WIDE Buttons :** Used to choose the desired menu item. It also moves the cursor up or down in the menu screen.

➲ **NEAR/FAR Buttons :** Used to change the parameter of the selected menu item. It also moves the cursor the left of right in the menu screen.

② **VIDEO OUT Jack:** Used to connect an external video monitor in jack.

③ **Power LED:** The LED turns on when power is supplied.

④ **Selection Switch:**
"A&B&C" Type ➲ • When the distance is far from camera to monitor, set "Selection Switch" in 2 or 3. It shows more clear video on the monitor.
"D" Type ➲ • Used to choose video output or UTP output.

⑤ **POWER Input Terminal**

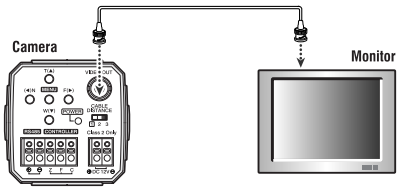
⑥ **Control Terminal**

⑦ **UTP Video Output Terminal:** These terminals provide a composite video output signal which may be transmitted over a twisted-pair connection to furnished with a suitable receiver.

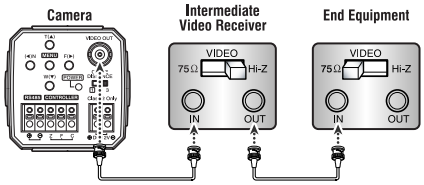
5. Installation

1. Connecting to Monitor

Connect the video out jack on the back of the product to the monitor.

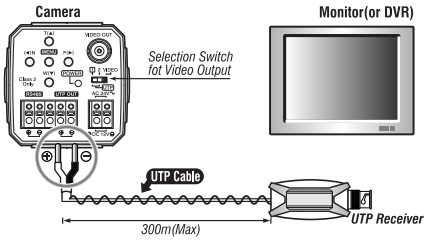


- The method of connecting the camera to a monitor varies depending on the model.
  Please refer to the manual for your model.
- Connect the camera after switching off each piece of equipment.
- Change the 75Ω/Hi-Z conversion switch of each piece of equipment according to the following diagram- move the switch of the intermediate video receiver to Hi-Z, and the end equipment to 75Ω.



• UTP Video Output Model

Connect the UTP video output terminal on the back of the product to the monitor.



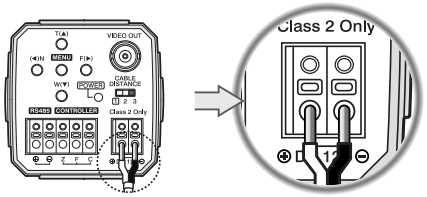
- When using UTP video output terminal, set "Selection Switch" at the "UTP OUT".
- When the distance is far from camera to monitor, set "Selection Switch" in the middle.
  The picture will show a better image.
- Connect UTP (Unshielded Twisted Pair) wire to the UTP output of the camera directly.
  UTP transmitter is included in the camera therefore additional UTP transmitter is not necessary.
- UTP receiver is necessary to connect UTP wire to Monitor or DVR.
- When connecting UTP wire, make sure the polarity of the video signal.
- Use UTP wire "CAT5 24AWG" to have the best transmission quality.

2. Connecting to Power

Each model has different power specification, please check the name of the model and power specification before connecting to power source. Please refer to the sticker identifying the model, which is attached on the product, for power specification.

• For DC 12V Power Type

- The wire is polarized. Be careful of polarity.
- Use DC 12V ⎓ power source.



Resistance of copper wire [at 20℃ (68°F)]

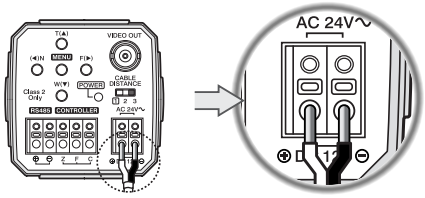
Copper wire size (AWG)	#24 (0.22㎟)	#22 (0.33㎟)	#20 (0.52㎟)	#18 (0.83㎟)
Resistance(Ω/m)	0.078	0.050	0.030	0.018
Voltage Drop(V/m)	0.028	0.018	0.011	0.006

. As voltage may drop according to the length of electric cord as above table, a camera may malfunction if too long output line of adaptor is connected to the camera.

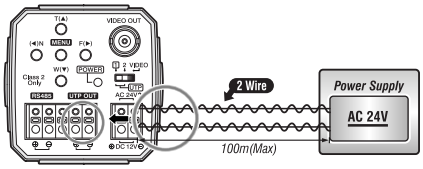
- Voltage for camera operation: DC 12V ± 10%
- Voltage drops on above table are variable according to types of electric cord and makers.

• For AC 24V / DC 12V Power Type

- Use AC 24V ∿ power source or DC 12V ⎓ power source.



• For AC 24V / DC 12V Power Type [UTP Video Output]



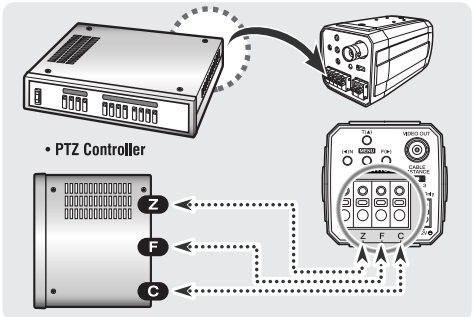
- When using AC 24V power with UTP wire, it is possible to supply the power within 100m.
- Use 4 wires by 2 pair of wires.
- When using DC 12V power, UTP wire can not be used for power line.

Notes

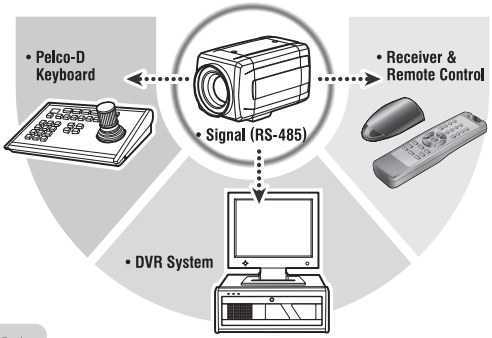
. Be sure to connect power after all the installation is done.
. Note that AC adaptor is not supplied with camera.
. Use only AC 24V / DC 12V UL listed class 2 power supply.
. Do not use power sources other than that specified.

3. Camera Control Methods

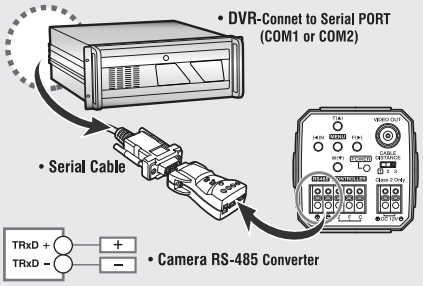
"A" & "B" Type Model : Remote control using for PTZ controller.



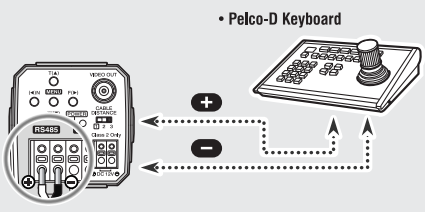
"A" & "B" & "D" Type Model : Remote control using for RS-485.



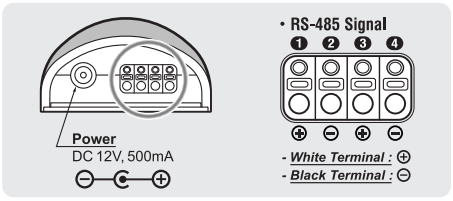
• DVR

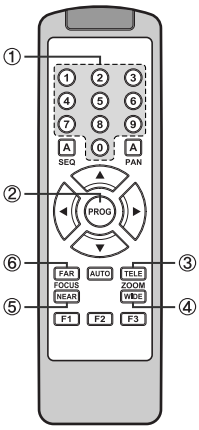


• Keyboard (Pelco-D)



• Receiver & Remote Control





① Camera Selection
- After camera connects with receiver, firstly check camera I.D.
- Press camera I.D. number(1~39 buttons) on the top of wireless remote controller.

➲ Example: ZOOM IN
- I.D. No.5: Press 5 +<TELE>
- I.D. No.15: Press <F1>+ 5 +<TELE>
- I.D. No.24: Press <F2>+ 4 +<TELE>
- I.D. No.34: Press <F3>+ 4 +<TELE>

• Caution : Usually camera I.D. number are selected from No.1 to No.39. over I.D. No.40, you will have a use limit.
- Initial camera I.D. number is set up No.0 when it takes out of manufacturer's warehouse.

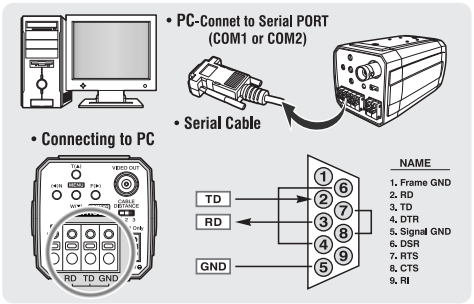
② Menu (PROG): Shows / Hides Menu.

③ (TELE): ┐
④ (WIDE): ┘ Moves up and down items.

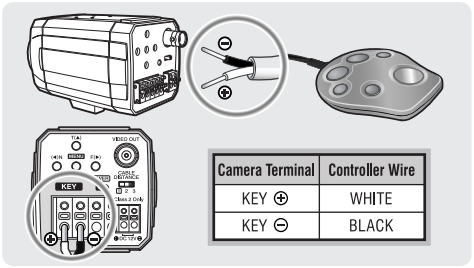
⑤ (NEAR): ┐
⑥ (FAR): ┘ Set data for the selected items.

"C" Type Model : Remote control using for RS-232C.

• PC (RS-232C)



• Wired Remote Controller



Camera Terminal	Controller Wire
KEY ⊕	WHITE
KEY ⊖	BLACK

6. Communication Protocol

■ PELCO "D" Byte Format -RS-485,2400bps,1 Start bit,8 data bits,1 stop bit,no parity

■ Command Message

Function	Zoom Tele						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x20	0x00	0x00	Checksum
Function	Zoom Wide						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x40	0x00	0x00	Checksum
Function	Focus Near						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x01	0x00	0x00	0x00	Checksum
Function	Focus Far						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x80	0x00	0x00	Checksum
Function	Menu On / Off						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x40	0x00	0x00	0x00	Checksum
Function	Power On						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x88	0x00	0x00	0x00	Checksum
Function	Power Off						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x08	0x00	0x00	0x00	Checksum
Function	Pelco D Stop						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x00	Don't care		Checksum

• Pelco Keyboard (95+ PATTERN)

Function	Menu On / Off						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x23	0x00	0x5F	Checksum

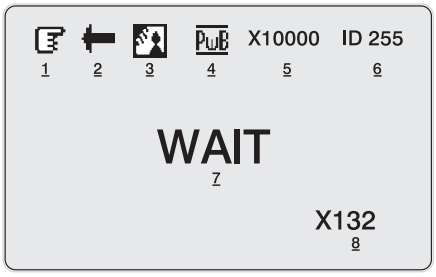
• V/D Keyboard (Set Preset + 98)

Function	Menu On / Off						
	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
MSG	0xFF	CamID	0x00	0x03	0x00	0x62	Checksum

7. On-Screen Display

■ Explanation of the On-Screen Display

The OSD (On Screen Display) is as follows:



1. Focus
The ☞ appear during the focus manual mode.

2. Mirror
When IMAGE MIRROR is ON state. The image is displayed in the opposite direction. The ⬅ appear during the mirror mode.

3. Back light Display
In case the excessive light is behind the center object, it is necessary to prevent the center object from too much darkness. Turn the BACK LIGHT ON, then the center object is not influenced by the back light.

4. WBC(White Balance Control) Display
See Page 20.

5. Shutter Speed
Use to select the shutter speed.

6. Camera ID Display
See Page 20.

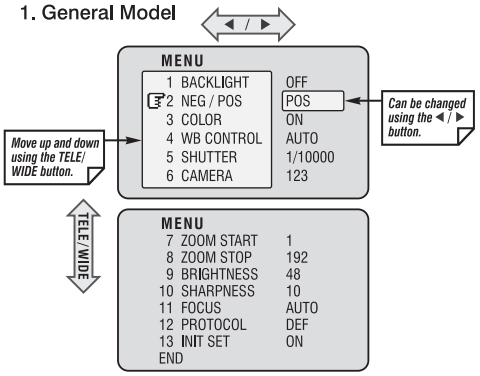
7. Wait Mode
Indicates the camera stand-by mode until the camera power turns on.

8. Example of Zoom, Brightness, Sharpness Display
See Page 20.

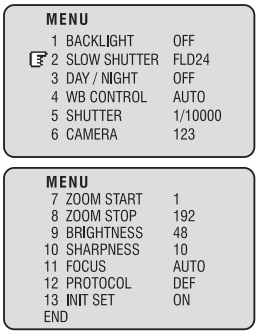
	FUNCTION	OSD Format	DESCRIPTION
1	Focus Mode	Non display	Automatic focus mode
		☞	Manual focus mode
2	Mirror Mode	Non display	No screen inverted
		←	Screen is inverted to the left or right
3	Back Light	Non display	Back Light compensation off
			Back Light compensation mode
4	WBC Mode	Non display	White Balance AUTO
		PWB	Push Auto White Balance: In this mode "Menu key" pressed, the white point traced automatically (PWB Auto Mode), "Menu Key" released, the white point preserved currently (PWB Manual Mode).
5	Shutter Speed	Non display 1 / 125 ⋮ 1 / 10000	Normal shutter (NTSC:1/60 PAL:1/50) 8 variable.
6	Camera ID	After input the identification number to each camera, Multi-point control is available. (000~255)	
7	Wait Mode	Wait	Indicates the camera stand-by mode. until the camera power turns ON.
8	Zoom Display	**x16** : Optical Zoom only mode **x32** : Digital Zoom x 2 mode **x192** : Digital Zoom x 12 mode	
8.1	Sharpness Adjustment Mode Display	SHP ——●——	x10
8.2	Brightness Adjustment Mode Display	◐ ——●——	x18

8. Menu Format

1. General Model



2. Day & Night Model



9. Menu Format Table

✔ : Day & Night Model

NO	NAME	FUNCTION
1	**BACKLIGHT**	Use to select BLC mode. OFF——>ON
2	**NEG / POS**	Use to change NEGATIVE and POSITIVE mode. ON : NEGATIVE mode OFF : POSITIVE mode
	SLOW SHUTTER ✔	Use under very low light condition for full color surveillance. OFF——>FLD2——>———>FLD128
3	**COLOR**	Use the change color and monochrome of picture. ON : Color mode OFF : Black and White mode
	DAY & NIGHT ✔	Use under low light condition for continuous surveillance. Auto——>ON——>OFF
4	**WB CONTROL**	▪ AUTO : Maintain best color condition by controlling the change of color automatically. WB Range 2800°K ~ 8000°K ▪ PUSH AUTO(PWB) : Can find White Balance exactly in case precise WB maintenance is needed under any environment. --Turn the AUTO mode, WB acts automatically. --Turn the PUSH AUTO mode, WB doesn't act.
5	**SHUTTER**	Use to select the shutter speed 8 steps. NORMAL(NTSC:1/60, PAL:1/50),1/125,1/250,---,1/10000
6	**CAMERA ID**	To connect a large number of camera, identification number can be assigned to each camera control easily. (OFF, 1-255 : total number of ID is 256) **CAUTION** : Set the ID number of camera, then the ID number is displayed continuously.
7	**ZOOM START**	Use to change the zoom start position.
8	**ZOOM STOP**	Use to change the zoom stop position.
9	**BRIGHTNESS**	Use to change the brightness of scene (0~48).
10	**SHARPNESS**	Use to change the contour of scene (0~15).
11	**FOCUS**	▪ AUTO : Set the focus mode to Auto mode. ▪ PUSH AUTO : Set the focus mode to Push Auto mode.
12	**PROTOCOL**	▪ DEF : Default ▪ P / D : Pelco-D
13	**INIT SET**	Set the initial mode ON, the changed data are renewed. Reset the data to its shipping condition.

10. Specifications

Signal System	NTSC	PAL
Signal System	525 Lines	625 Lines
Scanning System	2 : 1 Interlace	
Scanning Frequency(H)	15.734 kHz	15.625 kHz
Scanning Frequency(V)	59.94 Hz	50Hz
Image Sensor	1/4 inch SONY IT CCD	
Effective Pixels Number	768(H) x 494(V)[Normal:510(H) x 492(V)]	752(H) x 582(V)[Normal:500(H) x 582(V)]
S/N Ratio	More than 48dB (AGC Off)	
Resolution	Horizontal : 480 TV Lines [Normal : 380 TV Lines]	
Video Output Level	1.0 Vp-p (75 Ohms, composite)	
Lens	16x (F1.4, f=3.9~62.4mm)/ (22x (F1.6,f=3.9~85.8mm))	
Digital Zoom Ratio	12x (Total Zoom Ratio: 192x)/ (10x (Total Zoom Ratio: 220x))	
Min. Shooting Distance	1 cm (Wide) / 1 meter (Tele)	
Min. Illumination	1.0 Lux (30 IRE), 0.001 Lux (Day & Night Model)	
Sync. System	Internal	
OSD(On Screen Display)	On / Off	
Shutter Speed (8 Steps)	1/60 ~ 1/10,000 Sec.	1/50 ~ 1/10,000 Sec.
Input/ Output Connector	Control: 5 Pin Terminal, Power: 2 Pin Terminal, Video: BNC	
Power Consumption	DC 12V (DC 9V~15V), Max. 5.4W / 450mA	
(Option: AC24V/DC12V)	AC 24V (20V~28V) or DC 12V (11V~15V), Max 6W/ 0.5A	
Dimensions (WxHxD)	58 x 58 x 103.4 mm / (56.1 x 58 x 101.6 mm)	
Weight	Approx. 300g	